ABSTRACT

The latest Indonesian government plan regarding the relocation of the capital city of Indonesia to the island of Kalimantan, precisely around the Penajam Paser Utara Regency area, also demands a maximum level of service and telecommunication service facilities in order to support the needs of the government and the community in the area so that it is necessary to design a qualified telecommunications network to overcome these problems.

This final project will design, simulate, and analyze a fiber optic communication system from Samarinda to Penajam Paser Utara using Dense Wavelength Division Multiplexing (DWDM) technology. The performance standards used in this final project are Link Power Budget (LPB), Rise Time Budget (RTB), Signal to Noise Ratio (SNR), Q-factor, and Bit Error Rate (BER).

In this study, several gain scenarios were tested on amplifiers with values of 35 dB, 39 dB, and 43 dB where the scenario with 43 dB gain was able to meet performance standards and was feasible to use and implemented where this scenario was able to produce the smallest BER value of $9,91547 \cdot 10^{-13}$ and the largest bit error rate is $9,1891 \cdot 10^{-11}$.

Key Word : Dense Wavelength Division Multiplexing, Link Power Budget, Rise Time Budget, Signal to Noise Ratio, Q-factor, Bit Error Rate.